

REMARKS

The claims have been amended to more clearly define the invention as disclosed in the written description. In particular, the claims have been amended for clarity.

The Examiner has rejected claims 1-12, 23 and 27 under 35 U.S.C. 101, in that the claimed invention is directed to non-statutory subject matter.

Claim 23 now relates to a device and depends from apparatus claim 13. As such, claim 23 is statutory.

Claim 27 has been amended such that it now relates to a computer-readable medium having a computer program product stored thereon.... As such, Applicant submits that claim 27 is statutory.

With regard to claims 1-12, Applicant believes that the Examiner is mistaken. In particular, Applicant cannot conceive how the steps "filtering an audio signal", "dividing the filter audio signal into time segments" and "scaling the filtered audio signal segments" can be deemed "purely mental steps". However, notwithstanding, it should be clear that the input audio signal is being transformed to a different state.

Applicants therefore submit that claims 1-12 are statutory.

The Examiner has rejected claims 13-19, 25 and 26 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,111,960 to Aarts et al. The Examiner has further rejected claims 20-22 under 35 U.S.C. 103(a) as being unpatentable over Aarts et al. in view of U.S. Patent 5,509,080 to Roberts. In addition, the Examiner has

rejected claim 24 under 35 U.S.C. 103(a) as being unpatentable over Aarts et al.

The Aarts et al. patent discloses a circuit, audio system and method for processing signal, and a harmonics generator, in which a frequency band of an audio signal is selected, harmonics of the selected signal are generated by a harmonics generator, and the harmonics are scaled based on a level of the audio signal in the detected frequency band.

As noted in MPEP §2131, it is well-founded that "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Further, "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

With regard to claim 13, the Examiner states:

"Aarts discloses a device for enhancing an audio signal, the device comprising: filter means (fig. 5 #20) for filtering the audio signal so as to select a frequency range (col. 4 ln.60-62), dividing means (fig. 5 #240) for dividing the audio signal of the selected frequency range into time segments (col. 7 ln. 15-19), and scaling means (fig. 5 #241) for scaling the audio signal in each time segment so as to increase the sound level of the audio signal in said frequency range (col. 6 ln. 63-67 , col. 7 ln. 1-24), wherein the time segments are defined by zero crossings of the filtered audio signal."

With the exception of the "filter means", Applicant submits that the Examiner's analysis is completely erroneous. In particular, claim 13 includes the limitation "dividing means for dividing the filtered audio signal of the selected frequency range into time segments thereby forming filtered audio signal segments". While the Examiner identifies this as element 240 in Fig. 5, and refers to col. 7, lines 15-19, Applicant would like to point out that element 240 is a zero-crossing detector. As stated by Aarts et al., at col. 7, lines 15-19:

"Any conventional zero-crossing detector can be used for the zero-crossing detector 240, for instance, a limiter, etc. In case a limiter is used, the output signal of such a limiter would be a square-wave with a period of 2 zero crossings."

Quite obviously, the output from the zero-crossing detector is a detector signal indicating zero crossings, not filtered audio signal segments as specifically stated in claim 13.

Further, claim 13 includes the limitation "scaling means for scaling each of the filtered audio signal segments so as to increase a sound level of the filtered audio signal". First, element 241 identified by the Examiner is not a scaling means, but rather, a waveform generator. As stated by Aarts et al. at col. 6, line 63 to col. 7, line 15:

"a waveform generator 241 for generating a waveform based on the detected zero crossings, the waveform having an amplitude related to the detected level supplied by the detecting means 28. Preferably, the amplitude of the waveform is made proportional to the detected level. For this purpose the waveform generator 241 is coupled to both zero-crossing detector 240 and the detecting means 28. By generating a waveform in response to the detected zero crossings, it is possible

to generate harmonics having a predetermined and constant amplitude relation with each other. By selecting the appropriate waveform, it is possible to select which harmonics are generated and which not, and even which amplitude relation there should be. For example, a square waveform only comprises odd harmonics of a predetermined magnitude, whereas a triangular waveform also comprises odd harmonics but with different magnitudes. However, a sawtooth waveform comprises both odd and even harmonics. By scaling the generated waveform in response to the detected level, the generated harmonics will fit in with the audio signal."

It should be apparent that waveform generator 241 does not scale the amplitude of filtered audio signal segments. Rather, waveform generator 241 generates a waveform signal (e.g., a sawtooth waveform) whose frequency is controlled by the detected zero crossings of the filtered audio signal, and whose amplitude is controlled by the detected amplitude of the filtered audio signal.

The Roberts patent discloses a bass clipping circuit, in which a pair of oppositely poled diodes is arranged in "the output leg of the low frequency network 24" (col. 2, line 50). As such, Applicant submits that Roberts neither discloses nor suggests "comparing means for comparing an amplitude of the combined audio signal with a threshold value". Further, since, as noted in Roberts at col. 2, lines 52-55, "The wiring of the two opposing connected diodes 62 and 64 across the bass feedback shunt capacitor 40 effectively reduces only the high level bass signals, while allowing full boost to low level, low frequency signals" then surely, Roberts neither discloses nor suggests "adjusting means for adjusting the amplitude of the combined audio signal if the threshold is exceeded".

Furthermore, Applicant submits that Roberts does not supply that which is missing from Aarts et al., i.e., "dividing means for dividing the filtered audio signal of the selected frequency range into time segments thereby forming filtered audio signal segments" and "scaling means for scaling each of the filtered audio signal segments so as to increase a sound level of the filtered audio signal".

In view of the above, Applicant believes that the subject invention, as claimed, is neither anticipated nor rendered obvious by the prior art, either individually or collectively, and as such, is patentable thereover.

Applicant believes that this application, containing claims 1-27, is now in condition for allowance and such action is respectfully requested.

Respectfully submitted,

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